

PART ONE:
VOLATILE SUBSTANCE
MISUSE AS A PROBLEM

2 Prevalence and patterns

Data on prevalence and patterns of VSM are notoriously inadequate, for several reasons. Firstly, in many places inhalation of volatile substances is not, in itself, an offence, and therefore tends not to be recorded in law enforcement statistics. Secondly, much VSM is a clandestine activity that takes place at night and, in the case of petrol sniffing, often in remote locations; monitoring trends in use is therefore not easy. Thirdly, surveys of drug use by young people are typically based on samples of school students or on general population samples of people aged 14 years and over. Many inhalant users are aged less than 14 and do not attend school regularly, so do not appear in such surveys. With these constraints in mind, we here review evidence relating to patterns and prevalence of VSM in Australia and elsewhere.

2.1 Patterns of volatile substance misuse

Just as the term ‘volatile substance’ covers a wide variety of intoxicants, the label ‘VSM’ also embraces several distinctive populations of users, with different patterns of use. Following Rose (2001), it is useful to distinguish four groups:

- ‘average’ young people who experiment with inhalants—and usually do not persist;
- marginalised young people who engage in VSM. In urban settings in Australia, this most frequently involves ‘chroming’ or sniffing aerosol paints. The Parliament of Victoria Drugs and Crime Prevention Committee (Parliament of Victoria Drugs and Crime Prevention Committee, 2002) found that of 243 Children’s Court Search Warrants involving children aged 11 years and over, issued in the state of Victoria between December 2001 and March 2002, 30% included evidence of VSM;
- young people in some remote Indigenous communities who engage in petrol sniffing;
- marginalised and often homeless adults who sometimes use inhalants when they cannot obtain alcohol.

Researchers in the United States (US) have schematised a continuum of three types of inhalant user—young users, adolescent poly-drug users and chronic adult users—linked with progressively diminishing prospects for rehabilitation (May & Del Vecchio, 1997; Oetting, Edwards, & Beauvais, 1988).

Within specific inhalant using sub-populations, a further distinction is commonly made between ‘occasional’ (or ‘experimental’ or ‘recreational’) and ‘chronic’ use. None of these terms has a standardised usage; however, ‘occasional’ and ‘chronic’ are terms used to differentiate infrequent and less intensive VSM from long-term and generally also more problematic use.

Epidemiological research in the US reveals a correlation between early initiation of VSM (at age 13 or 14), regular use, and subsequent volatile substance dependence as measured by DSM-IV criteria (Wu, Pilowsky, & Schlenger, 2004). There is also general agreement in the

literature that the people who are the hardest to help stop sniffing are chronic sniffers. This is a critical point for those planning interventions: it is much easier to help people to stop VSM if the practice has not yet become entrenched. By the time someone has become a chronic sniffer, the likelihood of their stopping is substantially reduced.

Among urban young people volatile substance misuse appears to involve a relatively large number of experimental users and a smaller number of chronic users. In Aboriginal communities, however, the sniffing population often contains a relatively high proportion of chronic sniffers, particularly among older age groups, although the proportion so labelled depends in part upon one's definition of a chronic sniffer. For instance, a study of sniffers in Maningrida found that the mean period which current sniffers had been inhaling petrol was eight years (Burns, d'Abbs, & Currie, 1995), giving them significant opportunity to sustain neurological damage.

2.2 Volatile substance misuse around the world

It is difficult to assess VSM prevalence accurately within any population. Many general population drug use surveys exclude people aged less than 14 or 15 years, and/or—as they are conducted by phone—people without a fixed address. Studies of school populations exclude those who have left school early. Nonetheless, international research has identified inhalant use as a problem with particular prevalence among young people from poor and Indigenous (often minority) groups (Dinwiddie, 1994). VSM has been identified as a concern for North and South American First Nation peoples, Inuits, Indians and Pakistanis, black South Africans, Indigenous Australians, Maoris, Pacific Islanders and gipsy children in Eastern Europe (Chaudron, 1978; Moosa and Loening, 1981; Brady, 1988; Beauvais and Oetting, 1988; Flanagan and Ives, 1994). Beauvais and Trimble (1997) estimate that nearly 20 million people in Central and South America—mostly street children—sniff inhalants.

Despite its prevalence in developing countries, the highest national levels of 'lifetime'³ use among young people have been recorded in the developed world. A United Nations report lists 41 countries where prevalence data is available, and found the highest rates in the US, the UK (United Kingdom) and Australia (Commission on Narcotic Drugs, 1999). Inhalant use in the US appears to have recently increased in prevalence, at a time when most illicit drug use has either declined (cannabis, ecstasy and amphetamines) or held steady (heroin, cocaine and crystal methamphetamine) (Johnston, O'Malley, Bachman, & Schulenberg, 2006).

Prevalence of VSM also varies between ethnic groups. In both the UK and US, higher rates are recorded among Caucasians than Asians, Afro-Caribbeans (UK) or African-Americans (US) (Kurtzman, Otsuka, & Wahl, 2001; McGarvey, Clavet, Mason, & Waite, 1999). In the US, Native American youth are more likely than members of other ethnic groups to use inhalants (Mosher, Rotolo, Phillips, Krupski, & Stark, 2004), although one study reports a downward trend among American Indians (Beauvais, Wayman, Jumper-Thurman, Plested, & Helm, 2002).

3 Measures of 'lifetime' use indicate whether research participants report having ever used a particular substance.

Because Indigenous minorities in some countries contain a disproportionate number of poor and/or otherwise marginalised people, they tend to be over-represented among inhalant users; however, it is likely that poverty and marginalisation, rather than Indigenous status *per se*, account for this pattern. Within Indigenous populations, prevalence is also varied. For instance, while Canadian Indians are more likely than the general population to sniff petrol, some communities maintain low rates or are free of the practice (May & Del Vecchio, 1997).

Few inhalant-users become long-term or chronic users (Flanagan & Ives, 1994; Ramsey, Anderson, & Bloor, 1989). Only 1% of Australian 17 year olds said they used inhalants more than 10 times in 2002 (White & Hayman, 2004). In a study of adolescents in the US only 0.4% of respondents met the DSM-IV criteria for inhalant abuse or dependence (Wu et al., 2004).

2.3 Patterns of VSM in Australia

Australian studies reveal similar age and gender-related patterns of VSM to those found in the UK and US. As elsewhere, prevalence peaks early compared to other drug use, being highest among 12–14 year olds and diminishing rapidly thereafter (Premier's Drug Prevention Council, 2004; White & Hayman, 2004). National Drug Household Surveys (NDHS) indicate a low prevalence of VSM within the general Australian population. In 2004 only 2.5% of people aged over 14 years acknowledged ever using inhalants, with 0.4% acknowledging VSM within the preceding 12 months (Australian Institute of Health and Welfare, 2005).

Studies of school-age cohorts, however, indicate that a significant minority is involved. For instance, in 2002, 21% of Australian 12–17 year old students surveyed reported ever having used inhalants, compared with 25% reporting having used cannabis. Around 9% of 12 year olds and 2% of 17 year olds had used inhalants in the week preceding the survey (just over 2% of 12 year olds had used cannabis during this period) (White & Hayman, 2004). Males tend to use volatile substances at higher rates than females, other than among young adolescent users, where girls report similar or higher prevalence (Australian Institute of Health and Welfare, 2005; Drug Treatment Services Unit, 1999). Males also appear to use more intensively and problematically and are over-represented in treatment populations (Matthews et al., 2004; White & Hayman, 2004).

People who report inhalant use also frequently use other drugs (Pearson & Squires, 2003; Premier's Drug Prevention Council, 2004). The 2004 NDHS found that of those who had used inhalants within the last 12 months, 55.7% had combined this use with alcohol, 40.9% with cannabis, 30.8% with ecstasy/designer drugs and 24.3% with amphetamines (Australian Institute of Health and Welfare, 2005). A study of 110 inhalant-using clients of a Melbourne drug treatment service indicated that approximately four-fifths were also users of cannabis and alcohol and smaller proportions also took amphetamines, heroin and benzodiazepines (Lane, 2005).

During the late 1990s VSM became a matter of increasing concern in Australian cities and towns. In April 1997, for instance, 60 people were reported to be sniffing inhalants (mostly aerosol paints) in Alice Springs (Mosey 1997). Through the early 2000s it became apparent that VSM was by no means confined to the Indigenous population. By 2002 the VSM problem in

Queensland appeared to have spread from ‘beyond the Indigenous and rural communities to other young people, some as young as 12, across the state’ (Coleman, 2002, p. 5). Paint inhalation and other forms of VSM by both Indigenous and non-Indigenous people were recorded as matters of concern in urban and rural areas including Mount Isa, Cairns, Brisbane, Gippsland, Melbourne and Perth (Gray et al., 2006; Murphy, 2005; Ogwang, Cox, & Saldanha, 2006; Youth Affairs Council of North Queensland, 2005). However, just as petrol sniffing does not affect all remote Indigenous communities so also its prevalence varies between states, towns and cities. The literature contains few references, for instance, to VSM in either Sydney or Tasmania although this does not mean that it does not occur in these localities.

Figure 2: Examples of aerosol cans used for graffiti and ‘chroming’



2.4 VSM among Indigenous Australians

Studies of VSM in specific Indigenous communities suggest a higher prevalence than across the Australian population. While there are more non-Indigenous than Indigenous users of volatile substances in Australia, Indigenous people are nearly twice as likely as non-Indigenous people to use these substances (National Inhalant Abuse Taskforce, 2006). Moreover, petrol sniffing in some remote Australian Indigenous communities, in conjunction with other manifestations of poor health and lack of social opportunities, has consequences for individuals and their communities that are far greater than might be expected from the numbers of young people involved (Shaw et al., 2004).

Petrol sniffing remains the most common form of VSM in remote Indigenous communities, whereas in urban and regional settings spray paint appears to be the VSM product most frequently used by both Indigenous and non-Indigenous youth. We have argued previously that patterns of VSM appear to be determined by the user's location (i.e. whether they live in a remote community or in town), rather than by whether or not they are Indigenous (MacLean, d'Abbs, & Robertson-McMahon, 2005).

Petrol sniffing has been observed in some Central Australian Indigenous communities since the early 1940s, although levels of use were then low (Brady, 1992). Brady (1988) reported petrol sniffing in 1985 as being present in 29 Aboriginal communities in the Northern Territory (NT) and 26 communities in other states. At that time, according to Brady, petrol sniffing was not a problem in the Kimberleys or the Pilbara region of Western Australia (WA), or in the Barkly Tablelands, NT. It occurred mainly in Arnhem Land, and in Central Australia among desert Aborigines, and had also been reported in the Riverina region of New South Wales (NSW). Brady estimated the total number of habitual petrol sniffers in WA, South Australia (SA) and NT at between 600 and 1000 (Brady, 1992).

In 1994 Brady and Torzillo argued that petrol sniffing patterns had changed, with intensity of use increasing over the preceding 20 years, and with more users sniffing over longer periods, resulting in rising morbidity and mortality (Brady & Torzillo, 1994, p. 176). Since then, further shifts have been noted. Some communities have succeeded in reducing VSM, especially where Avgas (aviation fuel) and more recently Opal have been used as non-sniffable substitutes for unleaded petrol, in conjunction with a range of community-based interventions such as outstation programs (Shaw et al., 2004; Stojanovski, 1999).

Despite these successes, by the late 1990s petrol sniffing was being reported in some previously unaffected communities—in the Katherine region of the NT, Cape York in Queensland, south-west Queensland, western NSW and northern Victoria. The East Arnhem and Katherine regions also reported sniffing but the Barkly tablelands and communities to the west of Katherine did not (Select Committee on Substance Abuse in the Community, 2004). In 2005 petrol sniffing was reported to be entrenched in parts of the western corridor of Central Australia, and the tri-state region of SA, WA and the NT (Access Economics Pty Ltd, 2006).

During 2006 and 2007 d'Abbs and Shaw oversaw a series of surveys of petrol sniffing prevalence in more than 70 communities that had introduced Opal fuel (d'Abbs & Shaw, 2007). The methodology, adapted from a procedure developed by Nganampa Health Council, involved obtaining population lists of all persons aged 5–40 years in the communities concerned, and then asking at least three community residents to indicate whether persons on the list were current sniffers, former sniffers, or had never sniffed⁴. The estimated numbers of sniffers derived from this methodology are listed in Table 2.1 below. Overall, just over 1000 people were found to be currently sniffing, representing 4.8% of the total population aged 5–40 years.

⁴ In some cases, population lists could not be obtained, and estimates of numbers of sniffers were collected, again by asking local community residents such as health workers. In the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands the population lists were compiled by Nganampa Health for their own survey of petrol sniffing in APY communities; they used a base of population aged 10–40 years.

Table 2.1: Estimated number of current petrol sniffers in remote communities in seven Australian regions

Region	Population 5–40 yrs	No. of users	% users
APY Lands	1969 (10–40 yrs)	219	11.1
East Kimberley	547	32	5.8
Top End*	12 985	266	2.0
Far North Queensland	1861	96	5.2
Ngaanyatjarra Lands (WA)	1035	145	13.9
Eastern Goldfields	92	5	5.4
Central Australia	4418	244	5.5
Total	20 938	1007	4.8

* Data not available for four small Top End communities omitted from list.

Most Indigenous petrol sniffers are between 8 and 30 years of age, with a concentration in the 12–19 years range (Brady & Torzillo, 1994; Senate Community Affairs Reference Committee, 2006). Recent evidence, however, points to a broadening of the age range of users in Aboriginal communities. A 2006 NT inquiry heard evidence that the range included sniffers as young as five years and as old as thirty (Legislative Assembly of the Northern Territory, 2004; Senate Community Affairs Reference Committee, 2006). A similar trend towards an ageing inhalant user population was observed also in Victoria (Premier’s Drug Prevention Council, 2004). Increased prevalence in VSM among 18–25 year olds has also been recorded in the US (Wu et al., 2004).

Like long-term users in the mainstream population, Indigenous petrol sniffers are more likely to be male than female. In Central Australian remote communities Mosey (1997) reported that about a quarter of sniffers were girls. Similarly Shaw (1999) found that in 1996, 28% of sniffers in the community she studied were female, but that this proportion was increasing.

Indigenous petrol sniffers are more likely than other young inhalant users to become chronic users. In a study of a sniffing population in a Central Desert community, Shaw categorised 16% as chronic, 28% as regular and 56% as occasional. Chronic sniffers were more likely to be older, most of them between 20 and 29 years. A disturbing finding from this study was that more than two-thirds of occasional sniffers aged between 15 and 19 years of age were likely to become regular or chronic users as they got older (Shaw, 1999).

2.5 Summary

- Data on VSM are often of poor quality, partly because VSM is not a criminal offence, partly because it is often a clandestine activity, and partly because many users are very young and are not counted in drug use surveys.
- Around the world, VSM most commonly occurs among young people from poor (often indigenous minority) groups. It is often associated with poly-drug use.
- In remote Indigenous communities in Australia, petrol sniffing is the most common form of VSM, whereas in urban and regional centres sniffing aerosol paints ('chroming') is the preferred form of VSM.
- In Australia, since 1994 there appears to have been a reduction in intensity of petrol sniffing in some areas where it has been prevalent for a long time, particularly in Central Australia, although some communities still experience high levels. VSM by marginalised Indigenous and non-Indigenous youth has become a matter of community concern in some Australian cities and towns.
- A survey of petrol sniffing in remote communities conducted between 2005 and early 2007 indicated that fewer than 5% of persons aged between 5 and 40 years were current users.